


## COM102, COM104

## Serial Interface Modules

The module for the backplane offers 2 resp. 4 serial interfaces. The standards RS-485, RS-422 and RS-232 can be selected as well as the baud rate and the handshake procedure. The interfaces can be used with the communication solutions for Modbus RTU/ASCII, IEC 60870-5-101 and -103 or DNP3. Customized protocols can be implemented in PLC and C/C++. Thanks to the native mapping of the COM ports in the operating system of the controller CPU, no fieldbus data points need to be considered in the application program. The LEDs on the module enable targeted diagnostics in the switch cabinet even without a PC.

| Part type designation | Part number |
|---|---|
| COM102 | 00033475-00 |
| COM102 EC | 00040064-00 |
| COM104 | 00040063-00 |
| COM104 EC | 00040065-00 |

**Features**

- Module for the M100 backplane
- 2 or 4 serial interfaces
- Protocols RS-232, RS-422 or RS-485 configurable for each port
- The ports are galvanically isolated against each other and against the ground (GND) of the backplane
- Integrated termination resistor, switchable via configuration
- Diagnostic LED for module status
- Status LED for each COM port:
  - Rx, Tx activity
  - Display of buffer overflow Error indication: Parity, Frame, Overflow, ... (configurable)
  - State of terminating resistor

| Common properties | COM102 | COM104 |
|---|---|---|
| Basic function | 2 serial interfaces | 4 serial interfaces |
| | Protocols configurable for each port RS-232, RS-422, RS-485<br>The ports are galvanically isolated against each other and against the ground (GND) of the backplane<br>Integrated switchable terminating resistors | |
| System | Bachmann system M100 | |

| Module bus interface | COM102 | COM104 |
|---|---|---|
| Slot type | IO (1/E, 2, 3, 4, ...31) | |
| Module data rate | Typ.: 0 Mbit/s to 33.6 Mbit/s depending on the configuration | |
| Bus cycle time, min. | 4.5 µs [1)] | |

[1)] *Depending on the fieldbus used and the respective configuration, lower data rates and longer cycle times can be expected.*

| Network interface / bus interface | COM102 | COM104 |
|---|---|---|
| Cable specification | RS-422, RS-485: Shielded twisted pair cable<br>RS-232: Shielded untwisted cable | |
| Maximum cable length | RS-422, RS-485: up to 1 km at ≤ 115.2 kbit/s<br>RS-232: depending on baud rate:<br>• up to 30 m at ≤ 9.6 kbit/s<br>• up to 15 m at ≤ 19.2 kbit/s<br>• up to 5 m at ≤ 57.6 kbit/s<br>• up to 2 m at ≤ 115.2 kbit/s | |

| Serial COM ports | COM102 | COM104 |
|---|---|---|
| Number of interfaces | 2 | 4 |
| Protocol standard | EIA RS-232, RS-422, RS-485 configurable for each port | |
| Baud rate | 300, 1200, 2400, 4800, 9600, 19 200, 28 800, 38 400, 57 600, 76 800, 115 200, 250 000, 300 000, 375 000, 500 000, 750 000, 1 500 000, 2 500 000 bit/s | |
| Max. number of stations per line | Max. 32 participants in an RS-485 network, otherwise point-to-point | |
| Connector | Open terminal on M100 standard connector | |
| Integrated line terminators | Terminating resistor for RS-485, RS-422 switchable per port via configuration | |
| Hardware handshake (RTS, CTS) | For RS-232 configurable per port | |
| Software handshake (Xon, Xoff) | For RS-232 configurable per port | |
| API for C/C++ | Mapped as a native COM port in the operating system of the Bachmann CPU. Offers file, iocontrol and select. | |
| API for PLC | Access via function blocks of the file library | |
| Use on 3rd party controllers | Access via fieldbus data points | |
| Works with protocol implementations | IEC 68070-5-101, -103, MODBUS RTU, MODBUS ASCII, DNP3 serial | |

| Diagnostics | COM102 | COM104 |
|---|---|---|
| Electronic type plate | Yes (application interface and in the engineering tool) | |
| Machine readable type plate | Yes (QR code with type and part information and internet link) | |
| Operational indications | Module LED according to M100 standard<br>For each COM port:<br>• Rx LED (green at incoming data)<br>• Tx LED (green at outgoing data)<br>• LT LED (green if line termination (= terminating resistor, Rx termination) is connected) | |
| Error indications | ER LED (red; error causes are configurable: buffer overflow, parity error, frame error, break, voltage dip) | |

| Energy supply | COM102 | COM104 |
|---|---|---|
| Power dissipation | 1.1 W | 1.1 W |
| Power consumption from backplane | 1.1 W | 1.6 W |
| Supply terminal block bridge | Yes, internal connection from 1+ to 2+, and 1- to 2- | |
| **Product safety** | **COM102** | **COM104** |
| Galvanic isolation | 850 V AC | |
| Galvanic isolation between inputs | Yes (single channel isolation) | |
| Degree of protection acc. IEC 60529 | IP40, terminal block IP30 | |
| Overvoltage category acc. IEC 61010-1 | II | |
| Keying of backplane slots | Mechanical keying slot 0/C versus slot 1 to nn | |
| **Environmental conditions** | **COM102** | **COM104** |
| Temperature range, operating | -30 °C to +70 °C | |
| Temperature range, transport and storage | -40 °C to +85 °C | |
| Installation altitude, max. | Up to 2000 m without temperature derating<br>2000 m to 4500 m: Reduction of the max. ambient temperature by 0.1 °C per 100 m elevation | |
| Air pressure | 106 kPa to 58 kPa (0 m to 4500 m) | |
| Relative humidity, operation | Standard: 0 % to 100 % noncondensing<br>Extended Climate: 0 % to 100 % with temporary condensation | |
| Pollution degree acc. IEC 61010-1 | Standard: 2, noncondensing<br>Extended Climate: 2 | |
| Vibration | 6 g (14.1 Hz to 500 Hz)<br>7.5 mm amplitude (2 Hz to 14.1 Hz)<br>Test duration: 15 h | |
| Shock | 45 g max. (test scope 18 shocks)<br>20 g permanently (test scope 6000 shocks) | |
| **Approvals/certificates** | **COM102** | **COM104** |
| Product safety | CE, UKCA<br>cULus (NRAQ, NRAQ7) | |
| Hazard area operation | ATEX: Ex II 3G Ex ec IIC Gc | |
| Maritime | ABS, BV, ClassNK, DNV, KR, LR, RINA | |
| Hazardous substances and waste treatment | RoHS, RoHS China, REACH, WEEE | |
| Quality management | ISO 9001 for development and production | |
| **Engineering** | **COM102** | **COM104** |
| Configuration tool | SolutionCenter (≥ V2.80) | |
| Firmware package update | Yes (via SolutionCenter or console interface on the head module) | |
| **Mounting/installation** | **COM102** | **COM104** |
| Mounting type | Inserting and screwing onto the backplane with integrated M4 screw | |
| Number of fixings | 1 | |
| Ground connection for protection class I | No | |
| **Dimensions** | **COM102** | **COM104** |
| Number of slots | 1 | |
| Size unpacked W × H × D | 23.3 mm × 152.5 mm × 95.7 mm | |
| Mass unpacked | 264 g | 267 g |

## Order data

| Part type designation | Part number | Description |
|---|---|---|
| COM102 | 00033475-00 | Module with 2 serial COM ports for the M100 system<br>Serial interfaces for RS-232, RS-422, and RS-485 individually configurable; data rates up to 2.5 Mbit/s; terminating resistors switchable via software, hardware/software handshake; diagnostic LEDs; galvanic isolation between the interfaces and against the controller; connection to M100 standard terminal block; energy supply via backplane |
| COM102 EC | 00040064-00 | Like COM102; Extended Climate Range |
| COM104 | 00040063-00 | Module with 4 serial COM ports for the M100 system<br>Serial interfaces for RS-232, RS-422, and RS-485 individually configurable; data rates up to 2.5 Mbit/s; terminating resistors switchable via software, hardware/software handshake; diagnostic LEDs; galvanic isolation between the interfaces and against the controller; connection to M100 standard terminal block; energy supply via backplane |
| COM104 EC | 00040065-00 | Like COM104; Extended Climate Range |

## Accessories

| Part type designation | Part number | Description |
|---|---|---|
| BPR1nn | 00039235-nn | Backplane for DIN-rail mounting<br>Active backplane system M100: BPR1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for DIN-rail mounting; delivery without backplane slot covers and without mounting rail |
| BPR1nn EC | 00039236-nn | Like BPR1nn; Extended Climate Range |
| BPS1nn | 00039237-nn | Backplane for direct screw mounting<br>Active backplane system M100: BPS1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for direct screw mounting; delivery without backplane slot covers and without screws |
| BPS1nn EC | 00039238-nn | Like BPS1nn; Extended Climate Range |
| TPI100_W24_P5.0_Cgy_L1to24 | | Signal terminal block<br>Completely removable terminal block, push-in spring connector for system M100, 24-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1 to 24 |
| TPI100_W4_P5.0_Cgy_Lsup | | Supply terminal block<br>Completely removable terminal block, push-in spring connector for system M100, 4-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1+/1-/2+/2- |
| TKP106 | | Keying element<br>Keying element for signal terminal blocks and supply terminal blocks TPI100 for system M100, plastic ring with 6 keying elements |
| TPI100_W24_W4_Set [1)] | 00042412-00 | Terminal block set for M100 standard modules:<br>• 1x TPI100_W24_P5.0_Cgy_L1to24<br>• 1x TPI100_W4_P5.0_Cgy_Lsup<br>• 2x TKP106 |

[1)] *All components of the set are also available in bulk packages.*